UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/762,233	02/05/2001	Vitaly A Volodin	Q62631	1665

7590 08/26/2003

Sughrue Mion Zinn
Macpeak & Seas
2100 Pennsylvania Avenue NW
Washington, DC 20037-3213

EXAMINER
SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
2673	4

DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/762,233	VOLODIN, VITALY A	
	Examiner	Art Unit	
	Leonid Shapiro	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Drawings

1. Figure 1-13 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because in Fig. 13 different than English word '**or**' used. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

4. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.
(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Content of Specification

5. (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data shet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence

Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.

(e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification

should refer to another patent or readily available publication which adequately describes the subject matter.

(i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet (37 CFR 1.52(b)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

(j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

(k) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Claim Objections

6. Claims 16-19 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim do not refer back in the alternative only and cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 16-19 have not been not been further treated on the merits.

7. Claim 13 objected to because of the following informalities: On line 2 on page 66 of the Disclosure mentioned "selected sells". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "said unequal" in Line 25 of Page 66 of the Disclosure. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1, 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (APA) in view of Ito et al. (US Patent No. 5,959,603).

As to claim 1, APA teaches a method of driving a display having a panel including substrates having an array of scanning electrodes on one of substrate, an array of signal electrodes on the other substrate, and liquid crystal cells between electrodes at their intersection points, the cells generating display elements of the display (See Fig. 1, items Y1-Yn, X1-Xm, in description See Page 2, Lines 3-15), comprising the steps of: selecting scanning electrodes in one-by-one or group-by-group sequence, applying scanning voltages to the selected scanning

electrodes, and applying a reference voltage to the non-selected scanning electrodes (See Figs. 10-11, items Tr,V02, V01, in description See Page 9, Lines 8-31).

APA does not show applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements; the distinguishing step of: applying during selection period, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode.

Ito et al. teaches applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67); the distinguishing step of: applying during selection period, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply voltage levels during selection period as shown by Ito et al. in the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines 57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

As to claims 4-6, APA teaches a method of driving a display having a panel including substrates having an array of scanning electrodes on one of substrate, an array of signal electrodes on the other substrate, and liquid crystal cells between electrodes at their intersection points, the cells generating display elements of the display (See Fig. 1, items Y1-Yn, X1-Xm, in description See Page 2, Lines 3-15), comprising the steps of: selecting scanning electrodes in one-by-one or group-by-group sequence, applying scanning voltages to the selected scanning electrodes, and applying a reference voltage to the non-selected scanning electrodes (See Figs. 10-11, items Tr,V02, V01, in description See Page 9, Lines 8-31).

APA does not show applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements; the distinguishing step of: applying during period Tr, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode, the additional voltage levels being allocated to the boundary portions of the period Tr so that one level is allocated to the beginning portion and the other level is allocated to the end portion of the period Tr; applying, during the period Tr, voltage levels to the signal electrode in direct or in reverse order; and alternating in succeeding periods Tr, orders of applying of voltage levels to the signal electrode on the basis of changing of the polarity of the voltage deviation from Vo-level in the beginning (and, accordingly, in the end) of the period Tr so that the positive polarity being set in the beginning of the period Tr and the negative polarity being set in the beginning of the next period Tr.

Ito et al. teaches applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67); the distinguishing step of: applying during selection period, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67), the additional voltage levels being allocated to the boundary portions of the period Tr so that one level is allocated to the beginning portion and the other level is allocated to the end portion of the period Tr; applying, during the period Tr, voltage levels to the signal electrode in direct or in reverse order; and alternating in succeeding periods Tr, orders of applying of voltage levels to the signal electrode on the basis of changing of the polarity of the voltage deviation from Vo-level in the beginning (and, accordingly, in the end) of the period Tr so that the positive polarity being set in the beginning of the period Tr and the negative polarity being set in the beginning of the next period Tr (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply voltage levels during selection period as shown by Ito et al. in the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines 57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

10. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Ito et al. and further in view of Momose et al. (US Patent No. 5,157,387).

As to claim 2, APA teaches a method of driving a display having a panel including substrates having an array of scanning electrodes on one of substrate, an array of signal electrodes on the other substrate, and liquid crystal cells between electrodes at their intersection points, the cells generating display elements of the display (See Fig. 1, items Y1-Yn, X1-Xm, in description See Page 2, Lines 3-15), comprising the steps of: selecting scanning electrodes in one-by-one or group-by-group sequence, applying scanning voltages to the selected scanning electrodes, and applying a reference voltage to the non-selected scanning electrodes (See Figs. 10-11, items Tr,V02, V01, in description See Page 9, Lines 8-31).

APA does not show applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements; the distinguishing step of: applying during the period Tr after applying a voltage of one polarity about V0-level and before applying a voltage of other polarity about V0-level, the third additional V0-voltage level having a constant duration (t0) to signal electrode.

Ito et al. teaches applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67); the distinguishing step of: applying during the period Tr after applying a voltage of one polarity about V0-level and before applying a voltage of other polarity about V0-level, the third

additional V0-voltage level having a constant duration (t0) to signal electrode (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply voltage levels during selection period as shown by Ito et al. in the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines 57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

APA and Ito et al. do not show applying, during the period Tr two additional voltage levels having different polarities, the same constant modules (Vm) of deviation from V0-level, and constant and equal duration (tm/2) to signal electrode.

Momose et al. teaches applying, during the period Tr two additional voltage levels having different polarities, the same constant modules (Vm) of deviation from V0-level, and constant and equal duration (tm/2) to signal (See Fig. 2a, 2b, 3a, 3b, item t2, in description See Col. 7, Lines 5-52 and 63-65).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply voltage levels during selection period as shown by Momose et al. in Ito et al. and the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines 57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

As to claim 3, APA and Ito et al. do not show duration of all basic voltage levels is equal to constant value (Tr-tm-t0) under one-line and multiple line selection.

Momose et al. teaches applying, during the period Tr two additional voltage levels having different polarities, the same constant modules (Vm) of deviation from V0-level, and constant and equal duration (tm/2) to signal (See Fig. 2a, 2b, 3a, 3b, item t2, in description See Col. 7, Lines 5-52 and 63-65).

Since duration of t2 in Momose et al. arbitrary chosen and could be equal t2/2=tm/2, it would have been obvious to one of ordinary skill in the art at the time of invention that duration of all basic voltage levels is equal to constant value (Tr-tm-t0) under one-line and multiple line selection in Ito et al., the APA and Momose et al. method.

11. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Ito et al. and further in view of Kobayashi et al . (US Patent No. 5,162,932).

As to claim 7, APA teaches a method of driving a display having a panel including substrates having an array of scanning electrodes on one of substrate, an array of signal electrodes on the other substrate, and liquid crystal cells between electrodes at their intersection points, the cells generating display elements of the display (See Fig. 1, items Y1-Yn, X1-Xm, in description See Page 2, Lines 3-15), comprising the steps of: selecting scanning electrodes in one-by-one or group-by-group sequence, applying scanning voltages to the selected scanning electrodes, and applying a reference voltage to the non-selected scanning electrodes (See Figs. 10-11, items Tr,V02, V01, in description See Page 9, Lines 8-31).

APA does not show applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected

display elements; the distinguishing steps of: applying during period Tr, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode, the additional voltage levels being allocated to the boundary portions of the period Tr so that one level is allocated to the beginning portion and the other level is allocated to the end portion of the period Tr; applying, during the period Tr, voltage levels to the signal electrode in direct or in reverse order so that the order of their applying to the signal electrode is alternated in succeeding periods Tr.

Ito et al. teaches applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67); the distinguishing step of: applying during selection period, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67), the additional voltage levels being allocated to the boundary portions of the period Tr so that one level is allocated to the beginning portion and the other level is allocated to the end portion of the period Tr; applying, during the period Tr, voltage levels to the signal electrode in direct or in reverse order so that the order of their applying to the signal electrode is alternated in succeeding periods Tr (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply voltage levels during selection period as shown by Ito et al. in the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines

57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

APA and Ito et al. do not show splitting the voltage pulses applied to signal electrodes into a number of groups being related to different electrodes and shifting the pulses in time concerning their nominal positions in the period Tr so that the values of shifting time are the same for the pulses of single group, but are different for pulses of different groups, and constant for certain period, after termination the time period, other values of shifting time are set in certain or in all groups of voltage pulses or other aggregate of groups of voltage pulses is formed with different values of shifting time in various groups, and the other values of shifting time are set constant for the next time period, after termination of which the process of either changing or setting constant values of shifting are continued providing zero average deviation of duration of duration of each additional level from its nominal duration.

Kobayashi et al. teaches shifting the pulses in time concerning their nominal positions in the period Tr so that the values of shifting time are the same for the pulses of single group, but are different for pulses of different groups, and constant for certain period, after termination the time period, other values of shifting time are set in certain or in all groups of voltage pulses or other aggregate of groups of voltage pulses is formed with different values of shifting time in various groups, and the other values of shifting time are set constant for the next time period (See Fig. 8, items T1, T2, Tl, Th, Tt, in description See Col. 5, Lines 10-63).

It would have been obvious to one of ordinary skill in the art at the time of invention to shifting the pulses in time concerning their nominal positions in the period Tr so that the values of shifting time are the same for the pulses of single group, but are different for pulses of

different groups, and constant for certain period, after termination the time period, other values of shifting time are set in certain or in all groups of voltage pulses or other aggregate of groups of voltage pulses is formed with different values of shifting time in various groups, and the other values of shifting time are set constant for the next time period as shown by Kobayashi et al. in Ito et al. and the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines 57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

As to claim 8-10, since Kobayashi et al. setting time intervals arbitrarily (See Fig. 8, items T1, T2, Tl, Th, Tt, in description See Col. 5, Lines 10-63), it would have been obvious to one of ordinary skill in the art at the time of invention to set modulus of shifting times of voltage pulses applied to a group of signal electrodes in range of values from zero to tm/2 or as previous, latest, earliest shifting time value and place electrode at distance from other electrode in the group if they will have the same shifting time.

12. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Ito et al. and further in view of Yamazaki (US Patent No. 5,151,690).

APA teaches a method of driving a display having a panel including substrates having an array of scanning electrodes on one of substrate, an array of signal electrodes on the other substrate, and liquid crystal cells between electrodes at their intersection points, the cells generating display elements of the display (See Fig. 1, items Y1-Yn, X1-Xm, in description See Page 2, Lines 3-15), comprising the steps of: selecting scanning electrodes in one-by-one or group-by-group sequence, applying scanning voltages to the selected scanning electrodes, and

applying a reference voltage to the non-selected scanning electrodes (See Figs. 10-11, items Tr,V02, V01, in description See Page 9, Lines 8-31).

APA does not show applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level, the levels setting nominal values of mean square voltage on the selected cell or cells for obtaining current values of brightness of a selected display element or of a group of selected display elements; the distinguishing steps of: applying during selection period, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode, the additional levels setting practically constant (in time) deviations from the nominal values of mean square voltage on cells connected with the signal electrode, the deviations being caused by distortions of a shape of the voltage pulses in process of their propagation along by signal electrode.

Ito et al. teaches applying during selection period, a basic voltage level or levels consisting of a level or levels unequal to V0-level or/and of V0-level to a signal electrode for obtaining current values of brightness of a selected display element or of a group of selected display elements (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67); the distinguishing step of: applying during selection period, two additional voltage levels having different polarities, the constant modules of deviation from V0-level, and constant and equal duration to the signal electrode, the additional levels setting practically constant (in time) deviations from the nominal values of mean square voltage on cells connected with the signal electrode, the deviations being caused by distortions of a shape of the voltage pulses in process

of their propagation along by signal electrode (See Fig. 48 B, items Yc, Yd, in description See Col. 4, Lines 58-67).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply voltage levels during selection period as shown by Ito et al. in the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines 57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

APA and Ito et al. do not show providing, during a frame time period, a single or several additional time intervals (tc); applying, during some mentioned single or several intervals tc, compensative voltages Vcom (i) to each I-th scanning electrode, beginning with a certain electrode, or/and during other mentioned single or several intervals Tc, applying compensative voltages Vcom(j) to each j-th signal electrode, beginning with other certain electrode, the voltages Vcom(i) or/and, respectively, Vcom(j) having values or/and durations specific to each electrode and giving the total or a partial compensation of the deviations of the mean square voltages on the cells of I-th scanning electrode from their nominal values or/and, respectively, of the deviations of the mean square voltages on the cells of the j-th signal electrode from their nominal values, the deviations initiated by distortions of shape of the signal voltage pulses in process of their propagation along the signal electrode, or/and, respectively, initiated by distortions of shape of the scanning voltage pulses in process of their propagation along the scanning electrode; and applying, during the mentioned interval tc, the reference voltage or a quasi-reference voltage or a quasi-reference voltage on average or their combination to the scanning or/and to the signal electrodes free from the compensative voltage.

Yamazaki teaches providing, during a frame time period, a single or several additional time intervals (tc); applying, during some mentioned single or several intervals tc, compensative voltages Vcom (i) to each I-th scanning electrode, beginning with a certain electrode, or/and during other mentioned single or several intervals Tc, applying compensative voltages Vcom(j) to each j-th signal electrode, beginning with other certain electrode, the voltages Vcom(i) or/and, respectively, Vcom(j) having values or/and durations specific to each electrode and giving the total or a partial compensation of the deviations of the mean square voltages on the cells of I-th scanning electrode from their nominal values or/and, respectively, of the deviations of the mean square voltages on the cells of the j-th signal electrode from their nominal values, the deviations initiated by distortions of shape of the signal voltage pulses in process of their propagation along the signal electrode, or/and, respectively, initiated by distortions of shape of the scanning voltage pulses in process of their propagation along the scanning electrode; and applying, during the mentioned interval tc, the reference voltage or a quasi-reference voltage or a quasi-reference voltage on average or their combination to the scanning or/and to the signal electrodes free from the compensative voltage. (See Fig. 7, items F1, F2, TC, in description from Col. 8, Line 55 to Col. 5, Line 23).

It would have been obvious to one of ordinary skill in the art at the time of invention to provide compensatory time intervals (tc) as shown by Yamazaki in Ito et al. and the APA method in order to provide a driving method for a liquid crystal panel having reduced crosstalk (See Col. 11, Lines 57-58 in the Ito et al. reference) and a reduced number of column voltage levels (See Col. 11, Lines 49-50 in the Ito et al. reference).

13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Hoshino et al. (US Patent No. 5,301,047).

APA teaches a method of driving a display having a panel including substrates having an array of scanning electrodes on one of substrate, an array of signal electrodes on the other substrate, and liquid crystal cells between electrodes at their intersection points, the cells generating display elements of the display (See Fig. 1, items Y1-Yn, X1-Xm, in description See Page 2, Lines 3-15), comprising the steps of: selecting scanning electrodes in one-by-one or group-by-group sequence, applying scanning voltages to the selected scanning electrodes, and applying a reference voltage to the non-selected scanning electrodes (See Figs. 10-11, items Tr,V02, V01, in description See Page 9, Lines 8-31).

APA does not show applying pulses of voltage to signal electrode, the pulses setting basic voltage level or levels setting nominal values of mean square voltage on selected cells for obtaining nominal values of brightness of selected display elements; the distinguishing step of; forming voltage pulses in the shape providing total or partial self-compensation of spurious changes of the mean square voltages on the selected cells, the changes initiated by distortions of fronts and tails of the pulses in process of their propagation along display electrode.

Hoshino et al. teaches applying pulses of voltage to signal electrode, the pulses setting basic voltage level or levels setting nominal values of mean square voltage on selected cells for obtaining nominal values of brightness of selected display elements; the distinguishing step of; forming voltage pulses in the shape providing total or partial self-compensation of spurious changes of the mean square voltages on the selected cells, the changes initiated by distortions of

fronts and tails of the pulses in process of their propagation along display electrode (See Fig. 1a, 1B, 2, in description See from Col. 4, Line 18 to Col. 5, Line 16).

It would have been obvious to one of ordinary skill in the art at the time of invention to provide compensatory voltage pulses of specific shape to compensate the distortions as shown by Yamazaki in APA method in order to provide a LCD which is capable of decreasing variations in the effective values of driving voltages respectively applying to pixels (See Col. 1, Lines 39-42 in the Hoshino et al. reference).

14. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over APA and Hoshino et al. in view of Sheffer et al. (US Patent No. 5,861,869).

APA and Hoshino et al. do not teach the front of pulse is formed in stepwise shape.

Sheffer et al. teaches the front of pulse is formed in stepwise shape (See Fig. 6A, items 1-2, in description See Col. 9, Lines 52-64).

It would have been obvious to one of ordinary skill in the art at the time of invention to provide voltage pulses of specific stepwise shape as shown by Sheffer et al. in Yamazaki and the APA method in order to provide a LCD which is capable of decreasing variations in the effective values of driving voltages respectively applying to pixels (See Col. 1, Lines 39-42 in the Hoshino et al. reference).

Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

ls
August 14, 2003

BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600